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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,443

11/15/2005

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EXAMINER

LEE, GILBERT Y

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,443	<b>Applicant(s)</b> ARAI ET AL.	
	<b>Examiner</b> GILBERT Y. LEE	<b>Art Unit</b> 3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. The amendment filed 1/15/08 has been entered.

#### ***Claim Objections***

2. Claim 5 is objected to because of the following informalities: in line 2, "is" should be changed to --are--. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites "an angle". It is unclear to the examiner as to what the angle is in reference to.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munekata et al. (US Patent No. 5,649,709) in view of Yoshiyuki et al. (JP Pub. No. 2001-355740).

Regarding claim 1, the Munekata et al. (hereafter "Munekata") reference discloses a reciprocating seal (20) provided in an annular space (Fig. 2) formed between a shaft (18) and a housing (12), which move relatively to each other in a direction of the shaft (Fig. 2), said reciprocating seal comprising

a seal lip (34) brought into sliding contact with a surface of the shaft (Fig. 2),  
the seal lip having a two-step lip structure (Fig. 2) including a first step (e.g. 42) and a second step (e.g. 44),

a sub seal lip (36) in sliding contact with the surface of the shaft (Fig. 2),  
the second step being closer to the sub seal lip than said first step (Fig. 2),  
the first step and the second step each having a first inclined surface (e.g. right surface of steps 42 and 44 in Fig. 2) and a second inclined surface (e.g. left surface of steps 42 and 44 in Fig. 2) relative to a longitudinal axis of the shaft (Fig. 2), the first inclined surface of the first step and the second step being spaced further from the sub seal lip than the second inclined surface of the first step and the second step (Fig. 2).

However, the Munekata reference fails to disclose a plurality of protrusions extending in a direction parallel to the longitudinal axis of the shaft, said plurality of protrusions being formed on only the second inclined surface of the second step.

The Yoshiyuki et al. (hereafter "Yoshiyuki") reference, a lip seal, discloses the addition of a plurality of protrusions (e.g. 11 or 13) that extend in a direction parallel to

the longitudinal axis of the shaft, said plurality of protrusions being formed on only the second inclined surface of the second step (Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide protrusions to the second step of the Munekata reference in view of the teachings of the Yoshiyuki reference in order to improve the friction property of a seal having a two stage lip structure (Yoshiyuki, Abstract).

Regarding claim 2, the Munekata reference, as modified in claim 1, discloses the plurality of protrusion extending from a peak of said second step towards a sub seal lip (Yoshiyuki, Fig. 2).

Regarding claim 3, the Munekata reference, as modified in claim 2, discloses the plurality of protrusion originating at one end from the peak of said second step (Yoshiyuki, Fig. 2).

Regarding claim 4, the Munekata reference, as modified in claim 1, discloses the plurality of protrusions being equally spaced (Yoshiyuki, Fig. 2).

Regarding claim 5, the modified Munekata reference discloses the invention substantially as claimed in claim 1.

However, the modified Munekata reference fails to explicitly disclose the plurality of protrusions being triangular.

It would have been an obvious mechanical expedience to make the plurality of protrusions of triangular shape to the modified Munekata reference in order to provide the desired amount of friction. A change in form or shape is generally recognized as

being within the level of ordinary skill in the art, absent any showing of unexpected results.

Regarding claim 6, the modified Munekata reference, as best understood, discloses the invention substantially as claimed in claim 5.

However, the modified Munekata reference fails to explicitly disclose a vertical angle of each of the plurality of protrusions being 60° to 120°.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the vertical angle of each of the plurality of protrusions be 60° to 120° as a matter of mechanical expedience and in order to provide the desired amount of friction.

Regarding claims 7 and 8, the modified Munekata reference discloses the invention substantially as claimed in claim 1.

However, the modified Munekata reference fails to explicitly disclose a height of the plurality of protrusions being 2 to 500 $\mu$ m, specifically 5-100 $\mu$ m.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the height of the plurality of protrusions being 2 to 500 $\mu$ m, specifically 5-100 $\mu$ m as a matter of mechanical expedience and in order to provide the desired friction.

Regarding claim 9, the modified Munekata reference discloses the invention substantially as claimed in claim 1.

However, the modified Munekata reference fails to explicitly disclose an interval between peaks of the protrusions being 0.005 to 1.0 mm.

Discovering an optimum range of a result effective variable involves only routine skill in the art. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make an interval between peaks of the protrusions being 0.005 to 1.0 mm as a matter of mechanical expedience and in order to provide the desired friction.

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GILBERT Y. LEE whose telephone number is (571)272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on (571)272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.



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For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Patricia L Engle/  
Supervisory Patent Examiner,  
Art Unit 3673

/G. Y. L./  
Examiner, Art Unit 3673